Population, Migration, Aging and Health:

A Survey

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1. Introduction

As European countries experience rapidly ageing populations, two major challenges have emerged for policy makers. First, the decline in the size of the domestic labor force implies severe shortages in the availability of key skills needed in several sectors of the economy.\(^1\) Possible consequences are reduced productivity growth and decline in global competitiveness. Second, increase in life expectancy will typically imply longer periods spent in retirement, generating pressures on the sustainability of existing pension systems, as well as new needs to provide care for a growing elderly population.

Immigration might be a viable response to address both of these challenges. Young foreign workers can fill some of the short term skill shortages that have emerged and contribute in the medium and long run to reverse the trend towards population stagnation. At the same time, cultural differences and the common perception that foreigners might be a threat for the domestic population, in conjunction with the large migrations required to counter demographic developments in many European countries, suggest that migration can only be part of a broader mix of interventions.

The goal of this survey is to provide a systematic overview of the literature that has analyzed the interplay between population dynamics, ageing, health and migration, aimed at offering policy makers a sound understanding of the state of the art in this important research area. At the same time, we will identify key issues where more research is needed both to foster our knowledge, as well as to provide guidance for effective policy interventions. The review is carried out from the perspective of the economics literature, but given the complexity of the question we also refer to relevant studies carried out by demographers and sociologists.

Following an initial description of the main stylized facts on migration, population ageing and health in Section 2, the survey focuses on current demographic developments and fertility trends of the migrant and native population in destination countries (Section 3) and on the temporariness of the migration spell (Section 4). We review the main findings in the literature on the fiscal effects of migration in European countries and the US (Section 5) and describe the role that migration can play to address skill and labor shortages (Section 6). Section 7 analyzes the health care sector, focusing on shortages of health care workers in European countries and the international migration of health professionals. We then review the literature on migrants’ health care needs and the

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disparities in the access to health care services between immigrants and natives. Finally, we present the main findings from the very recent literature on amenity-driven migration of retirees from Northern European countries towards Mediterranean coastal regions and on migrants’ portability of pension and health benefits across countries (Section 8). Section 9 summarizes the main findings and policy implications.

2. Main stylized facts

Several concepts specific to the migration and demographic literature will be referred to in our discussion. Below we report a glossary of the most commonly used ones.

**Box 1: Glossary of terms**

- **Brain drain** is defined as the reduction in the per capita human capital in the emigration country (see Dustmann et al. 2011a).
- **Circular migration** (or repeat migration) refers to the systematic and regular movement of migrants back and forth from their country of origin towards foreign countries.
- **Destination/Host country** refers to the place where the migrant has settled.
- **Immigrant** refers to an individual who has moved to a new country from his/her country of birth. From the perspective of the host country, we define as immigrants individuals who are born in another country.
- **Net migration** refers to the total inflow of immigrants net of the outflow of emigrants during a given period.
- **Origin/Source country** refers to migrant’s country of birth.
- **Outmigration** refers to migrants moving out of the host country to either return to their country of origin (return migration) or to move onwards towards a third destination.
- **Return migration** refers to re-migration from the host country back to the country of origin by the migrant’s own choice (see Dustmann 2000).
- **Replacement (fertility) rate** is the total fertility rate per woman which generates stability of a population under the hypothesis of no migration flows and unchanged mortality rates. This is estimated by the literature at about 2.1 children per woman for most countries, although it may slightly vary with mortality rates.
- **Total Fertility Rate** is an indicator of the level of fertility calculated by summing age-specific birth rates over all reproductive ages. In a specific year, it refers to the number of
children that would be born to a woman if she were to live to the end of her fertile years and if she were subject throughout her life to the age-specific fertility rates observed in a given year.

The population of Europe is ageing rapidly and this is resulting in a downward trend in the share of the working age (15-64) population.

As shown in Figure 1 the share of the working age population started to shrink in the mid-2000s. The most recent forecasts suggest that this phenomenon is likely to persist over the next 45 years (see EC 2014a). In particular, the share of the working age population will decline considerably so that by 2060, less than 57 percent of the population is expected to belong to the economically active age group (see Figure 2).

**Figure 1: Share of working age population as % of total population in the EU28 – Past trends**

![Graph showing the share of working age population as % of total population in the EU28 from 1960 to 2013.](source: Adapted from World Development Indicators, World Bank.)
Two are the main reasons behind ageing: a decline in overall fertility rates and an increase in life expectancy. Total fertility rates in EU countries have been on a steady downward path between 1960 and 2005. While in 1960 the average European woman was expected to give birth to 2.67 children, her counterpart in 2005 was expected to deliver only 1.49 children, corresponding to a 44 percentage points decline. A slight improvement in total fertility has been observed though in the last decade and by 2012 the average total fertility rate in the EU was 1.56 children per woman (see EC 2014a). This basic trend conceals important differences across countries. For instance, while fertility rates in Ireland have been consistently higher than in the rest of the EU, countries like Portugal or Spain had substantially higher fertility rates than the EU average in the sixties, seventies and even eighties, but then saw them drop below the EU average starting in 1990. Other countries like France have instead been able, through a series of target policies, to maintain fertility rates approximately constant and close to the replacement rate of 2.1 children per woman (see Figure 3).

The most recent forecasts, elaborated by the European Commission, indicate that we should expect a slight improvement in total fertility rates over the next 45 years, and by 2060 the total fertility of the average woman in the EU should reach 1.76 children, a figure that is still substantially short of the natural replacement rate (see EC 2014a).
Over the same period, life expectancy has increased dramatically. The European Commission Ageing Report (2014) shows that the average man born in a EU country in 1960 expected to live 66.9 years, whereas the average woman 72.3. By 2012 these figures had increased dramatically to 76.1 years for men and 82.2 years for women, i.e. by a staggering 14 percent (see Figure 4).

Considerable variation exists across EU member countries, but differently from total fertility rates, a path towards convergence is emerging. Eastern European countries, such as Bulgaria, Estonia, Hungary, Latvia, Lithuania, Romania and Slovakia report the lowest life expectancy in 2013, but they are on a path of rapid catch up with the rest of the EU. Bulgaria and Romania are expected to experience respectively a positive 10.5 and a 10.6 years increase in life expectancy of males between 2013 and 2060 (see EC 2014a).

Southern European countries, such as Italy and Spain, as well as Central European and Nordic countries, such as Germany and Sweden, report instead among the highest levels of life expectancy across EU countries in 2013. Swedish men (women) have a life expectancy at birth of 79.8 (83.6) years in 2013 and Italian men (women) of 79.8 (84.7). Figure 5 reports recent European Commission’s forecasts indicating that life expectancy at birth will continue to increase, and by 2060 it is expected to reach 84.7 years for males and 89.1 years for females in the EU (see EC 2014a).

Source: Adapted from The 2015 Ageing Report, European Commission (2014a)
Notes: 1960 no data for Croatia, Latvia and Romania; 1970 no data for Croatia and Romania; 1980 no data for Croatia and Cyprus; no data for Croatia until 2005.
Population ageing will generate growing pressures on welfare states, adding strains to existing pension systems, which might no longer be able to maintain living standards in old age, as well as on health systems, which are expected to both require more resources and to adapt to an increased demand for long term care (LTC) for a growing elderly population.
Figures 6 illustrates future trends in the average gross replacement rate of public pensions\(^2\) in the EU and reveals a declining trend over time. This expected declining pattern is the result of a series of reforms that have been recently introduced to alleviate the pressures of population ageing on EU welfare states. Over the last decade, many European countries have reformed their pension systems, shifting from defined benefit to defined contribution schemes - implying a stricter link between contributions paid and benefits received - and removing redistributive programs from contributory schemes. This overall trend is increasing the risk of old-age poverty. Figure 7 shows that most of the EU countries are expected to experience a significant drop in average gross replacement rates by 2060 (see EC 2012). Some Eastern European countries (e.g. Latvia and Poland) are expected to witness the largest drops, followed by Nordic countries (Finland and Sweden), and Southern European countries (Greece, Italy and Spain).

Figure 6: Average gross replacement rate at retirement - Public pensions – EU27 Projections

\[^2\] The gross average replacement rate at retirement is calculated as the ratio of the first pension of those who retire in a given year over the average wage at retirement.
Figure 7: Change in average gross replacement rate at retirement - Public pensions – EU27 2060-2010

Source: Adapted from The 2012 Ageing Report, European Commission (2012)

Figure 8 looks at the evolution of overall public health care spending in the last two decades in the EU. Health care expenditures witnessed a sharp increase until 2009 when they slightly declined and then settled at a relatively high level right below 8% of GDP. Given the forecasted rapid population ageing, the burden of health and long term care (LTC) on the Member States’ public finances is expected to increase. Figure 9 reports forecasts for the EU Health and LTC expenditures as a percentage of GDP for the next 45 years. Health expenditures are expected to reach 8.3% of GDP by 2050 in EU countries and level off in the following decade, while health care spending on LTC services are predicted to almost double by 2060 (see EC 2012).

3 The figures for 2010 in Figures 8 and 9 are different due to the different sources of data used: Figure 8 reports data from the World Bank development indicators, while Figure 9 reports projections based on Eurostat data, EUROPOP2010 projections.

4 According to a recent OECD report (2013), one of the reasons behind the leveling out of health expenditures after 2009 is the economic crisis. Many OECD countries have implemented severe health spending cuts between 2009 and 2011, with the most affected countries being those more severely hit by the economic crisis.
Figure 8: Health expenditure, public (% of GDP) – EU28

Source: Adapted from World development indicators, World Bank

Figure 9: Health care and Long-term care spending as % of GDP – EU27 Projections

Source: Adapted from The 2012 Ageing Report, European Commission (2012)

Immigration can in principle help offsetting these trends by increasing both the size of the working age population and the total fertility rate. Considering the EU, a whole positive net inflow\(^5\) has been consistently observed starting from the second half of the 1980s (see EC 2014a).

In particular, new arrivals peaked in 2003 averaging well over a million per year. Following a sharp drop during the global economic crisis, net migration flows picked up once again after 2011 and reached pre-crisis levels by 2013 – the last year for which data are available – (see Figure 10\(^6\)).

\(^5\) The aggregate net inflow for the Euro Area (EA) and the EU are the result of the sum of net migration flows in Euro Area countries and European Union Member States respectively.
According to the most recent projections contained in the European Commission 2015 Ageing Report\(^7\), between 2013 and 2060 cumulated net inflows to the EU are expected to reach 55 million. The main destination countries will be Italy, the United Kingdom, Germany, and Spain, with a forecasted cumulated net inflow of respectively 15.5 million, 9.1 million, 7 million and 6.5 million migrants (see Table 1).

\(\text{Figure 10: Net migration flows, 1965-2013}\)


\(^6\) Net migration is measured as the difference between the total population on 31 December and 1 January for a given calendar year, minus the difference between births and deaths (or natural increase).

\(^7\) Projections estimates are carried out starting from EUROPOP2013 demographic projections by Eurostat.
Migrants are typically younger than the host country population when they arrive and in the short run they contribute to rejuvenate the host country’s labor supply. In the medium to long run it is...
important to note that migrants will age as well, and new immigration will be required to counteract the continuing ageing of the population. One key factor that determines to what extent the host country’s age structure is affected by immigration in the medium or long term is the fertility rate of the immigrant population and of their descendants in comparison to the host country population.

Fertility behavior is deeply linked to factors such as education, labor market participation, ethnicity and immigrants’ generational status. Fertility is thus highly correlated to migrants’ integration in the host country. In this section we compare the fertility profiles of the immigrant and native population over time and examine the three main mechanisms uncovered in the literature to explain the fertility behavior of migrants before and after migration takes place.

The overall evidence suggests that migrants assimilate to the destination country fertility patterns after some time spent in the host country and that the reproductive behavior of second-generations is more similar to that of natives compared to the behavior of first-generations.

Research comparing the fertility rate of immigrant and native populations, as well as the study of assimilation trends of migrants’ fertility to the host countries is thus fundamental to properly assess the potential benefits of immigration on population ageing, as well as the speed of integration of immigrants. Table 2 reports the share of foreign born and foreign nationals over total population for selected countries in Europe and reveals the sharp increase in immigration experienced by Western European countries in the last two decades. Table 3 from Sobotka (2008) displays the percentage of births to immigrant or foreign-nationality women in eleven European countries with a recent history of significant migration streams. Almost all countries in the table have experienced a steady increase in the share of births to immigrant or foreign-nationalities women since the mid-1990s. Southern European countries in particular, such as Italy and Spain, report a sharp increase in fertility which is at least partly due to the high immigration inflows that these countries began to experience in the 1990s and the early 2000s.
Table 2: Foreign-born and Foreign national population over total population for selected countries in Europe

<table>
<thead>
<tr>
<th>Country</th>
<th>Share of Foreign-born</th>
<th>Share of Foreign nationals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>..</td>
<td>10.4</td>
</tr>
<tr>
<td>Belgium</td>
<td>9.7</td>
<td>10.3</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>..</td>
<td>4.2</td>
</tr>
<tr>
<td>Denmark</td>
<td>4.8</td>
<td>5.8</td>
</tr>
<tr>
<td>Estonia</td>
<td>..</td>
<td>18.4</td>
</tr>
<tr>
<td>Finland</td>
<td>2.1</td>
<td>2.6</td>
</tr>
<tr>
<td>France</td>
<td>..</td>
<td>10.1</td>
</tr>
<tr>
<td>Germany</td>
<td>11.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Greece</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Hungary</td>
<td>2.7</td>
<td>2.9</td>
</tr>
<tr>
<td>Iceland</td>
<td>..</td>
<td>6.0</td>
</tr>
<tr>
<td>Ireland</td>
<td>..</td>
<td>8.7</td>
</tr>
<tr>
<td>Italy</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>30.9</td>
<td>33.2</td>
</tr>
<tr>
<td>Norway</td>
<td>5.5</td>
<td>6.8</td>
</tr>
<tr>
<td>Netherlands</td>
<td>9.1</td>
<td>10.1</td>
</tr>
<tr>
<td>Poland</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Portugal</td>
<td>5.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>..</td>
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<tr>
<td>Slovenia</td>
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</tr>
<tr>
<td>Spain</td>
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<td>4.9</td>
</tr>
<tr>
<td>Sweden</td>
<td>10.6</td>
<td>11.3</td>
</tr>
<tr>
<td>Switzerland</td>
<td>21.4</td>
<td>21.9</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>6.9</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Source: Adapted from OECD Factbook (2014)
Source: Sobotka (2008)

The migration and fertility literature has detected the main factors and the underlying mechanisms that shape fertility behavior of migrants and determine its differences with respect to native populations. Immigrants’ age at migration, education level, fluency in the host country language as well as the motives behind the migration decision, the time spent in the host country and the cultural heritage from their country of origin are important drivers of immigrants’ fertility behavior.

The literature has identified three main mechanisms that shape migrants’ fertility trends: selection, disruption and adaptation (for a comprehensive overview see Adserà and Ferrer 2014). The selection mechanism (subsection 3.1) emphasizes that individuals who migrate differ significantly
from the non-migrant population in terms of socio-demographic and economic characteristics. Such differences contribute to shape immigrants’ fertility patterns once in the host country. The adaptation mechanism (subsection 3.2) points out that migrants’ fertility behavior progressively assimilates to that of natives as time spent in the host country increases. Finally, the disruption hypothesis (subsection 3.3) predicts instead a drop in fertility right before or after migration occurs: migrants may decide to postpone childbearing until they settle in the new country given that migration may temporarily separate partners. Migrants may also delay childbearing given the uncertainty about the economic conditions they will face in the host country.

These mechanisms are interrelated and they may all be at work at some point over the immigrant’s fertility lifecycle. The literature has not yet reached a general consensus on the extent to which immigrants’ fertility assimilation mechanisms are in place and which of these patterns prevails.

### 3.1 The selection hypothesis

The selection hypothesis suggests that immigrant women are a self-selected sample of the country of origin population in terms of their level of education, potential income, age, etc. This may make them different from women left behind in the source country when it comes to fertility and childbearing behavior. The empirical evidence surveyed in this section reveals that immigrants’ level of education and the life-cycle timing of their migration decision deeply affect immigrants’ fertility outcomes in destination countries.

Kahn (1988) carried out one of the first systematic analyses of fertility differentials, and in particular of the role played by the selection into emigration. Using individual level data from the 1980 US Census and aggregate data from origin countries, she performs a simple covariance analysis and her findings emphasize the role played by sending-country fertility levels in determining migrants’ fertility behavior. Migrants from high-fertility countries report, on average, higher fertility once in the host country compared to migrants from lower fertility countries. This positive relationship, however, becomes weaker when positive self-selection is in place: when immigrants are positively selected in terms of education, the influence of the high-fertility norms of their origin populations is weaker and immigrants’ fertility tends to be lower. Kahn also examines the fertility behavior of child and adult immigrants separately and finds that adult immigrants have higher mean levels of fertility which are partly explained by the fact that the latter tend to be older and somewhat less educated than child immigrants.
Using data from the 1970 and 1980 US Censuses, Blau (1992) finds evidence of a small immigrant-native differential in fertility which is explained by the positive selection of immigrants on education with respect to the non-migrant population. In her study, she adopts an empirical framework which resembles that used by Borjas (1987) for the analysis of earnings differential and assimilation between immigrants and natives. She uses two years from the US Census to disentangle the effect of time spent in the US from arrival cohort effects. She finds evidence indicating that the small fertility differential between immigrants and natives can be explained by positive migrant self-selection on education which translates into relatively low fertility compared to non-migrant population in the country of origin. In addition, Blau finds that immigrants report even lower fertility than natives with comparable characteristics and she finds indirect evidence for a higher demand for child quality rather than quantity among immigrants compared to natives: an increase in earnings of migrants’ couples is more devoted to increase the expenditure per child (i.e. child quality) rather than to increase the number of children compared to natives.

A more recent paper by Avitabile et al. (2014) also uncovers migrants’ preferences for child quality rather than quantity and a consequent reduction of immigrants’ fertility. The paper studies the effect of immigrants’ citizenship status on their fertility behavior combining data from the German Microcensus, the German Health Interview and Examination Survey for Children and Adolescents and the German Socioeconomic Panel and exploits the 2000 nationality law according to which Germany shifted from granting citizenship to migrants via a *ius sanguinis* to a *ius soli* system. The authors find that birthright citizenship reduces significantly immigrants’ fertility and improves child quality via for example a reduction in the obesity gap between immigrants and natives children and improvements in immigrants’ children well-being and non-cognitive outcomes.

Evidence of migrants’ positive selection on education is also uncovered by Choi (2014). The novelty of her study lies in pooling nationally representative datasets from Mexico and the United States: the 2002 Mexican Family Life Survey, the 2002 and the 2006-2010 US National Survey of Family Growth. Taking pre-migration fertility rates into account, she estimates the fertility rate of Mexican Americans and finds evidence of positive migrants’ selection in terms of education. Despite the positive selection on education, however, Choi finds that Mexican immigrants have higher fertility compared to those who stay, which is partly explained by immigrants postponing childbearing until the post-arrival period.
3.2 The adaptation hypothesis

Self-selection mechanisms do not necessarily rule out the possibility of observing assimilation over time in fertility behavior. Immigrants may adapt and adjust their initially higher fertility rate to that of the native population over time. Research on fertility assimilation processes has mainly addressed the issue following three different approaches: by distinguishing between first and second generations of immigrants (Stephen and Bean 1992, Parrado and Morgan 2008, Dubuc 2012), by focusing on foreign born migrants who migrated as children (see e.g. Kahn 1988, Bleakley and Chin 2010, Adserà et al. 2012), or by studying the impact and strength of cultural and ethnic ‘ties’ over time (Fernandez and Fogli 2009, Blau et al. 2013). Overall findings from the literature provide supporting evidence of second generations and child immigrants having fertility behavior closer to that of the native population compared to first generations. Country of origin characteristics related to the source country language and its cultural heritage may also contribute to reduce or increase the gap in fertility and to fasten or slow down the pace of assimilation.

For the US, Parrado and Morgan (2008) test the fertility assimilation hypothesis for Hispanic and Mexican immigrants and estimate fertility by computing the average number of children ever born for three immigrant generations of Hispanic and Mexican women born between 1885 and 1964. They combine data from the 1940 to the 1970 US Census with data from the 1986, 1988, 1994, 1995, 1998, 2000, 2002, and 2004 June Current Population Survey and draw information on fertility levels in Mexico from the 1990 and 2000 Mexican Census. The authors compare fertility of Hispanic (and in particular Mexican) women by five-year birth cohorts and belonging to three different generations (i.e. foreign-born women, native-born women with at least one parent foreign-born and native-born women with both parents native born) with fertility of native white women. Their cohort and generational analysis reveals a declining trend in immigrants’ fertility which is consistent with the assimilation hypothesis. Mexican immigrant women are found to have significantly lower fertility level than non-migrant Mexican women. Evidence of convergence to white women fertility across immigrants’ generations is also found. Using data from the 1970 and 1980 US Census, Stephen and Bean (1992) also focus on Mexican women’s fertility trends in the US considering both first and second generation migrants. The authors find evidence consistent with assimilation across generations to non-Spanish-origin white women fertility patterns, that is with native born Mexican immigrants having lower fertility than the first generation born in Mexico.
Evidence of fertility assimilation of successive generations of immigrants to the fertility profile of natives also emerges from European studies. Dubuc (2012) studies fertility rates of second generation immigrants in the UK and compares their behavior to those of their parents and to those of recent immigrants from the same country of origin. She uses Labour Force Survey data for years between 2001 and 2006 and builds a measure of births to mothers of childbearing age up to 14 years before the survey. Dubuc finds evidence of fertility differentials by ethnic groups, although a converging trend towards the lower UK average fertility level emerges. In particular, second generation Pakistani and Bangladeshi immigrant women display lower total fertility rates than foreign-born immigrants from the same high-fertility countries of origin across all age cohorts, with marked differences for women below their 30 years of age (see Figure 11). The decrease in the fertility gap over time is found to be the result of both a decline in fertility of immigrants originating from high-fertility countries and even lower fertility rates of second generation immigrants. The latter group displays fertility patterns which are closer to the UK average than to those of recent immigrants and this suggests intergenerational assimilation and a possibly significant role for the country in which childbearing takes place in determining the fertility behavior of both generations.

Figure 11: Age-specific fertility rates of all women in the UK and of UK-born and immigrant Pakistani and Bangladeshi women, average 1987–2006

Source: Dubuc (2012)

Another approach to accurately estimate fertility assimilation patterns ruling out any potential disruption in fertility caused by the migration experience and the possibility of migrants’ self-selection is that of Adserà et al. (2012) who focus on the fertility behavior of women who migrated as children to Canada, the UK or France. They concentrate on adaptation mechanisms and perform
a Poisson regression analysis to estimate the main determinants of the number of live births per woman. Their results are consistent with the assimilation hypothesis and point out the limited role played by the immigrants’ country of origin in explaining child immigrants’ fertility. Adserà et al. (2012) find though that time spent in the destination country has a heterogeneous effect across origins.

The heterogeneity in fertility behavior driven by differences in migrants’ countries of origin has been explained in the literature by the linguistic and cultural differences that characterize sending countries. Bleakley and Chin (2010) investigate the interrelation between English proficiency and social integration of immigrants in the US using micro-data from the 2000 Census. They estimate the impact of English proficiency on the assimilation of immigrants exploiting information on immigrants’ age at arrival and belonging to an English speaking country. Immigrants who are more fluent in English are found to have, on average, fewer children, than less English fluent immigrants even though they do not significantly differ in terms of the probability of having a child (see Bleakley and Chin 2010).

Besides language, immigrants’ cultural heritage may alter or delay the process of fertility assimilation through the intergenerational transmission of fertility behavior. Fernandez and Fogli (2006) try to disentangle the effects of personal-family related experiences (e.g. the number of siblings of a woman) from those driven by source country heritage. They employ US data from the 1977, 1978, 1980, 1982–1987 General Social Survey and use lagged values of total fertility rate by country of ancestry as a proxy for cultural heritage. The authors find a positive and significant impact of both family fertility experience and cultural heritage on fertility behavior of US born immigrant women. In a subsequent paper Fernandez and Fogli (2009) using data from the 1970 US Census find a similar effect of the migrant’s culture of origin on the fertility behavior of second generations. In particular they find that the effect of lagged total fertility rate in 1950 in the migrant’s country of ancestry is significantly positively associated with the fertility patterns of the second-generations.

Blau et al. (2013) go a bit further and allow the cultural proxy to vary across birth cohorts of second generation immigrants in the US. They use the 1995-2006 March Current Population Survey and exploit information from the 1970–2000 Census data to build a set of parental characteristics so that individuals from the same ancestry have different cultural proxies depending on their age. They examine the effect of the characteristics of the parents of first generation of immigrants on their US-born descendants’ behavior on labor market, education and fertility outcomes and their results highlight the presence of a significant positive effect of the intergenerational transmission of gender
roles on the fertility behavior of second generation women in the US, within an overall pattern of assimilation towards natives’ level of fertility.

3.3 The disruption hypothesis

The decision to migrate might affect reproductive behavior, for instance because a migrant decides to postpone childbearing after arrival into the new country due to a temporary negative income shock. Migrants may also be forced to postpone childbearing due to separation from the spouses around the time of migration (see Blau 1992).

Disruption mechanisms can be observed when a decline in fertility occurs right before or right after migration and it may or may not be followed by a catch up. It is hard though to empirically assess the disruption hypothesis as this requires information on pre-migration fertility patterns and because of potential selectivity of the migrant population (Adserà and Ferrer 2014). US studies report consistent evidence of migrants interrupting fertility around the time of migration, while European evidence is far more heterogeneous across countries.

To capture disruption in fertility for immigrants in the US, Kahn (1994) exploits information from the 1980 US Census and the 1986 and 1988 June Current Population Surveys on the actual number of children ever born and the number of children that women expect to have in the future. She runs a synthetic cohort analysis to trace the fertility pattern of a fixed cohort of immigrants in the 1980s and then compares the results with migrants’ fertility expectations. She explains the raise in the immigrant-native fertility gap in the 1980s as a consequence of a sharp decrease in natives’ fertility compared to immigrants’ rather than a rise in migrants’ fertility. The fertility gap is mainly explained by socio-economic and demographic differences between the migrant and native populations in terms of skills, income and ethnicity. However, synthetic cohort analysis reveals that part of the fertility differential is driven by a disruption followed by catch up effects in fertility behavior and the analysis of fertility expectations confirms this result: recent immigrants are found to have had lower than average fertility compared to older immigrants’ cohorts and natives, however they are found to compensate for this gap by expecting to have more children in the future. Blau (1992) also finds evidence of disruption mechanisms in fertility profiles of US immigrants: she considers the fertility behavior of fixed immigration cohorts over time focusing on the 1970 and 1980 Census and she finds that immigrants’ fertility tends to rise over time, especially for the most recent arrival cohort. She finds that immigrants from high-fertility countries of origin do not display high fertility rates at arrival in the US. Moreover, she attributes findings of fertility disruption to demographic factors such as delayed marriages or temporary separation of the spouses due to
migration, rather than to economic factors such as temporary income loss of the spouses. Choi (2014) analyses pre-migration fertility of Mexican immigrants to the US and compares them with the non-migrant population in the same birth cohort. She predicts a migrants’ anticipatory behavior and finds evidence of disruption in fertility right before migration. Migrants seem to partially catch up for the previous loss in fertility, even though the pre-migration disruption seems to persistently affect long-term fertility.

In Europe, Andersson (2004) uses Swedish longitudinal register data on a sample of 446,000 foreign-born women who ever lived in Sweden before 1999 and finds evidence of a before-migration disruption in fertility of immigrants to Sweden, which is followed by a right-after-migration catch up. Toulemon (2004) and Toulemon et al. (2008) also find evidence of disruption patterns in fertility for immigrants to France. Toulemon et al. use data from The Study of Family History survey which was conducted within the 1999 General Population Census and estimate total fertility by taking into account fertility both before and after migration to identify potential discontinuities around the time of migration. The level of fertility measured in immigrants’ countries of origin is found to be higher than that of immigrants’ in France and the fertility differential between migrants and non-migrants in the country of origin is found to be even larger than the immigrant-native gap observed in France. Different findings emerge in a study carried out by Garssen and Nicolaas (2008) on migrants to the Netherlands. They use information from the Dutch municipal population register data at 1st January 2005 and find that Turkish and Moroccan women display higher fertility rates than those reported in their country of origin; migration for family formation reasons might explain this trend. Female migration from Turkey and Morocco, in fact, is mainly motivated by family reunification purposes, given the traditional role of women in these source countries.

Similar results are found by Mayer and Riphahn (2000) who investigate the presence of assimilation and/or disruption patterns in the fertility of immigrants to Germany. To this end, they use the 1996 wave of the German Socio Economic Panel (GSOEP) and apply count data models to estimate migrants’ fertility behavior. They find no evidence in favor of the disruption hypothesis, and they uncover instead relatively high fertility rates for migrants after arrival compared to natives. At the same time, they find that migrants’ completed fertility decreases with the share of fertile time they spend in Germany. This evidence is consistent with the assimilation hypothesis and reveals the importance of including the number of fertile years spent in the host country rather than the number of years since migration in the estimation of fertility behavior.
Open issues

Paucity of data is one of the main constraints to an exhaustive analysis of immigrants’ fertility. In particular, detailed information on immigrants’ lifetime events such as age at migration, complete birth histories (i.e. before and after migration), return migration and the socio-demographic characteristics of their families of origin would allow for more robust analysis of migrants’ demographic trends.

As regards demographic projections, more generally, improvement of forecasting techniques is desirable given that current projections heavily rely on and are highly sensitive to models’ assumptions. Demographic forecasting techniques should be refined and adopt a comprehensive view of all aspects of the economy and society under analysis. In particular, more effort should be made in the development of new macroeconomic models simulating the interplay of population ageing and other factors of the economy, such as trends in health status and expenditures, labor market participation and age structure, immigration flows, saving behavior, and capital flows (see the National Research Council Report 2012).

Despite current limitations in fertility estimates and projections, the evidence we have reviewed so far suggests that migrants tend to assimilate to the destination country fertility patterns after some time spent in the host country. Immigrants’ younger age and relatively high fertility rates may help rejuvenating the host countries populations in the short run. However, the assimilation of migrants to the host country fertility patterns means that the size of the immigrant inflow required to fully compensate for the host countries ageing workforce is likely to be politically too large and immigration alone cannot be the only answer to population ageing in Western countries.

4. Permanent versus temporary migration

To fully understand the demographic and fiscal impact of immigration on the host countries, we must consider whether migration is permanent or temporary. If immigration is mainly permanent, older migrants will contribute to the ageing of the host country population in the long run and to an increase in the demand for health and long term care services. If, instead, temporary migration occurs it is important to understand whether those who leave the host country are systematically different from those who remain in terms of, for example, their age, skill level and labor market outcomes. Temporary migrants may either return permanently to their country of origin, they may
engage into subsequent moves back and forth from their origin country, or they can further migrate to other destinations after some time in the host country (see e.g. Nekby 2006).

Non-permanent migration plays an important role in many destination countries. Figure 12 - taken from Dustmann and Görlach (2015b) - plots the estimated share of immigrants who leave the host country against the number of years since migration and illustrates some interesting patterns for two main groups of destination countries: i) Anglo America, Australia and New Zealand and ii) Europe. The picture highlights how European countries display significantly higher outmigration rates compared to the more traditional destination countries. In particular, almost 50% of immigrants to Europe have already left their first destination country ten years after arrival, while this is true for about 20% of immigrants to Anglo America, Australia and New Zealand.

Ignoring the possibility of temporary migration may thus bias our estimates of immigrants’ economic performance in the host country labor market and lead to unreliable forecasts of their net fiscal contribution to the host country economy. Until recently, the literature has mainly considered migration as a permanent phenomenon (see e.g. Chiswick 1978 and Borjas 1985). Starting in the late eighties, however, scholars have begun to investigate why migrants out-migrate from destination countries (for a comprehensive review, see Dustmann and Görlach 2015b) and who are
the return migrants, addressing the selectivity in the return migration decision and its effects on the host economy (see e.g. Borjas and Bratsberg 1996, Dustmann et al. 2011a).

4.1 Why do migrants return?

In simple neo-classical models the migration decision only depends on differences in relative wage levels net of relocation costs and on expectations of higher earnings in the country of destination. Within this framework, the individual migrates assuming to remain permanently in the destination country and if return migration occurs, it can only be the result of a failed migration experience, meaning that the migrant wrongly assessed the costs and the benefits of migration. More recent contributions, however, have introduced models of endogenous return migration decisions, where the latter is the result of a utility maximization strategy planned in advance covering the whole life cycle of the migrant. In this respect, Dustmann and Görlach (2015b) provide a careful discussion of the motives behind return migration and develop a general theoretical model of temporary migration decisions which encompasses and synthetizes most of the theoretical work developed to date (see e.g. Colussi 2003, Bellemare 2007, Thom 2010, Kirdar 2012, Lessem 2013, Nakajima 2014).

The authors identify four main factors that are likely to affect a migrant’s return decision: i) a higher preference for consumption in the country of origin than in the host country, ii) a lower price level in the migrant’s origin country compared to the host country, iii) migrant’s accumulation of human capital in the host country given initial higher wages in the host country, but a higher rate of return for skills in the country of origin, iv) the possibility for the migrant to accumulate human capital more quickly in the host rather than in the origin country.

The framework proposed by Dustmann and Görlach (2015b) can also be extended to describe more complex forms of temporary migration, such as repeat migration. Repeat migration can be introduced for instance by letting migrant’s relative preferences for the host compared to the origin country change with time spent away from the country of origin (Nakajima 2014)8. Dustmann and Görlach (2015b) also point out that unforeseen shocks may reverse the migrant’s economic prospects. Similar structural dynamic models of migrant’s decision problem have been developed, for instance, by Colussi (2003), Thom (2010), and Lessem (2013) in which time varying locational preferences determine location choices.

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8 See also e.g. Kennan and Walker (2011) for a sophisticated dynamic model of internal migration allowing for subsequent migrations.
4.2 Who are the return migrants?

The second important question that needs to be addressed concerns whether there are systematic differences between permanent and temporary migrants. This potential heterogeneity is particularly relevant as it might have important consequences for the host country demographic and fiscal trends. In particular, several papers have emphasized that if outmigration is selective it may affect the analysis of immigrants’ earnings assimilation in the host country (see e.g. Borjas 1989, Borjas and Bratsberg 1996, Lubotsky 2007, Dustmann and Görlach 2015a), which in turn matters for their fiscal contribution.

In their pioneering contribution, Borjas and Bratsberg (1996) apply Roy’s selection model to explain selective outmigration. Return migration might occur both as the result of the migrants’ having planned their return in advance after having reached a savings target in the host country, or as a result of an unforeseen shock which translates in earnings in the host country that are lower than expected. The main prediction of the model is that selection at the outmigration stage is likely to strengthen the original selection of immigrants to the destination country. In particular, the direction of the skill-selection of returning migrants depends on whether migrants are positively or negatively selected when they first arrive in host country: if the original sample of immigrants is positively selected, then those who stay are the best out of the best, while if the original sample is negatively selected, then those who remain end up being the worst out of the worst.

While Borjas and Bratsberg (1996) implicitly assume fixed migration duration for all temporary migrants, Dustmann and Görlach (2015a) extend the model by letting migrant’s gain in human capital vary with time spent in the host country. Dustmann et al. (2011a), starting from a dynamic Roy model, have also extended Borjas and Bratsberg (1996) by allowing for multiple skills in a dynamic setting.

Systematic empirical evidence on the selectivity of temporary – and especially repeat - migration is scarce and the main reason is the lack of longitudinal data providing information on the exact timing of the migration moves, since - for instance - in surveys time since immigration is often not clearly linked to the first or more recent arrival, and most of the data available contain information on only one migration step. Nevertheless, recent improvements in data availability have allowed researchers and policy makers to deepen their understanding of temporary migration and of its effects into the host country. In particular, some survey data now report historical retrospective histories of immigrants (e.g. the Mexican Migration Project dataset) and administrative data, especially in Nordic European countries, are becoming more and more accurate and often include
information on year of emigration, the countries of destination, and the migration trajectories back and forth from these countries over time (Dustmann and Görlach 2015a).

Evidence on outmigration patterns and selectivity has shown that differences in the probability to return depend on migrants’ country of origin, in particular on the geographic and cultural distances between the source and host country and on the different motive to migrate, i.e. whether the focus is on labor migrants, asylum seekers or family migrants (see e.g. Jasso and Rosenzweig 1982, 1990, Edin et al. 2000, Klinthäll 2003, Bijwaard 2010). In this respect, using combined Dutch register data at the National and Municipal level, Bijwaard (2010) finds that labor migrants are the most flexible in terms of mobility and display relatively higher probability of leaving the host country compared to family migrants. Once they out-migrate, however, both labor and family migrants display relatively high chances of migrating back to the host country.

The literature also reports evidence on the relation between educational attainment and the propensity to out-migrate. Using German data from the German Socio-economic Panel (GSOEP) and IAB data on Turkish migrants in Germany, Dustmann (1996) finds that less educated immigrants in Germany have longer intended migration durations, and that years of schooling increase the probability that immigration is intended to be permanent. Drawing from the GSOEP data, Constant and Zimmermann (2011) find that more than 60% of the migrants belonging to the countries with which Germany had guest-worker agreements in place engage in repeat and circular migration and that being highly-educated reduces the number of exits, while being a male and owning a German passport positively affects the number of exits from Germany. Constant and Zimmermann (2012) show also that remittances and family considerations are among the main reasons inducing a return migrant to go back to the host country and that having received vocational training in Germany encourages circular migration. The latter effect may be explained by the relatively high transferability and higher returns to vocational education both in the destination and in the source country (Constant and Zimmermann 2012). A positive effect of education on the probability of return is also found by Reagan and Olsen (2000), who use longitudinal data from the 1979 cohort of the US National Longitudinal Survey and find evidence of the responsiveness of return migration to migrants’ skill level, earnings, and to cultural and linguistic ties to the US and the country of origin. In particular, migrants with higher earnings potential are less likely to out migrate, though obtaining a college degree increases the possibility of return. Moreover, the authors find that time since migration has a negative effect on the probability of return, while the opposite is true for age at migration.
The non-random return of migrants to the country of origin has important consequences for the assessment of their performance in the host country’s labor market and of their likely impact on the host country’s welfare state. Borjas (1989) uses information from the 1972–1978 Survey of Natural and Social Scientists and Engineers to estimate sizable outmigration rates from the US and finds evidence of lower average earnings of return migrants with respect to permanent migrants to the US. Lubotsky (2007) takes a more systematic perspective linking information from administrative sources, i.e. the US Social Security records, to data from the US Survey of Income and Program Participation and to the Current Population Survey to construct migrants’ employment and earnings histories. He finds evidence of both selective return migration and of circular migration to and from the US. His results indicate that returnees are characterized by lower than average earnings, and not accounting for this important stylized fact leads to a significant upward bias in the estimates of immigrant earning assimilation in the US. Importantly though, he finds also evidence of selective repeat migration of low-wage immigrants. Not accounting for this factor has led to a persistent over-estimation of the decline in earnings among subsequent cohorts of immigrants arriving between 1960 and 1980.

Open issues

The issue of the temporariness of migration and the potential selectivity in outmigration open up future research avenues on important aspects that still need to be addressed. One recently emerging stream of literature which paves the way for further studies and requires demanding analytical methods, investigates immigrants’ assimilation paths in destination countries modelling migrants’ migration plans in conjunction with their economic decisions, including labor supply and human capital investments (Dustmann and Görlach 2015b, Adda et al. 2015).

5. The fiscal effect of immigration

Both demographic developments in the immigrant and native populations (see section 3), as well as the mobility of the immigrant populations, through various forms of return and circular migration (see section 4) must be taken into account when studying the fiscal impact of immigration on the host country. This topic has received considerable interest over the past few decades, and the recent financial crisis has contributed to make this debate even more heated.

The characteristics and preferences of a country’s citizens determine its public budget constraint via tax rates corresponding to different levels of government spending. Where a country stands on the government budget constraint ultimately depends on the economic policy decisions which are affected by institutional factors (Preston 2014).
Immigration may affect the public finances of the host country by injecting new potential workforce into the labor market and changing the age composition of the host country population. The host country fiscal system may thus benefit from immigrants’ tax payments, but also face a rise in the demand for public services. Immigration may ultimately affect the fiscal capacity of the already present population and the cost of provision of already existing services.

The literature on the potential fiscal effects of migrants on the ageing Western world has followed a variety of different approaches. Two broad groups of studies can be identified. A rich stream of research has addressed the issue from a static perspective: some studies have restricted their attention to immigrants’ reliance on the host country welfare state (see e.g. Hansen and Lofstrom 2003, Riphahn 2004, Bratsberg et al. 2010, 2014) while others have tried to assess the net fiscal impact of immigration by simultaneously considering in their analyses the taxes paid and the benefits received by immigrants (see e.g. Dustmann et al. 2010, Dustmann and Frattini 2014). Several other papers instead have modelled the impact of immigration using dynamic frameworks (see e.g. Auerbach and Oreopoulus 1999, 2000, Lee and Miller 2000, Storesletten 2000, 2003, Collado and Iturbe-Ormaetxe 2004).

Static models provide an accurate description of the impact of immigration at a given moment in time, but in general they will not be able to offer much guidance outside the specific case being considered. Dynamic models, especially those built around the generational accounting technique, allow for more general analyses, but rely on a set of highly specific assumptions the realism of which is hard to assess.

Overall, immigrants’ effect on the host country fiscal system is found to depend on the characteristics of the immigrant population in terms of education, age structure and income. While the literature so far has found heterogeneous results when it comes to the effect of low-skilled immigration on government budget balances, inflows of highly skilled, young migrants have been found to represent a net gain for the host country, although the size of the effect varies depending on the host country characteristics. The positive impact of immigrants is larger in those countries characterized by flexible labor markets and by a relatively small size of the welfare state.

In this section we present the main findings in the literature based on static frameworks (subsection 5.1) and then discuss the results obtained in dynamic analyses (subsection 5.2).
5.1 Static frameworks

Static models typically focus on how current immigrants affect the host country public finances. The analysis is based on calculating the tax revenues collected from immigrants and the cost of the welfare benefits and public services they receive from the government in a given period. This information is then used to assess the net position of the migrant population with respect to the government budget. This is an accounting exercise which requires important assumptions to be made, but it does not rely on predictions about future contributions of current and future cohorts of immigrants (see e.g. Dustmann and Frattini 2014).

Labor market institutions and the generosity of the welfare state affect the fiscal impact of immigration. Less flexible labor markets and more generous welfare states might well lead to a negative selection of immigrants in terms of skills, and this might result in an overall negative fiscal impact of immigration. In what follows we report the main findings from different studies focusing on a group of European countries characterized by very different welfare systems such as Norway, Sweden and Germany, which restrict their attention to immigrants’ reliance on welfare and highlight significant differences in immigrants’ welfare state participation rates, dependency and assimilation over time. We also review the main evidence from relatively more comprehensive analysis of the overall fiscal effects of immigration to the US, the UK and Sweden.

The Norwegian experience is analyzed in a recent study by Bratsberg et al. (2010), using longitudinal administrative register data on male immigrants arrived in Norway from developing countries between 1971-1975, which allows to follow their employment history over time. Their findings depict a gloomy picture both in terms of migrants’ labor market performance and reliance on the Norwegian welfare system. In particular, they find evidence of a significant drop in labor market participation rates ten years after arrival, much larger than the decline estimated for the native reference group. The authors also find evidence of high social security dependency rates for those migrants who exit the labor market. Migrants’ poor labor market performance can be explained by both a relatively large share of migrants employed in industries with shorter career paths compared to the native population and by a generous welfare system for households with a non-working spouse and many children, which are the dominant household type in the sample of labor migrants analyzed. Conditioning on family size and spousal employment status significantly reduces the predicted employment differential between immigrants and natives.

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9 To make results comparable between immigrants and natives, the native-born sample is stratified in order to match the distributions of birth year and education in the migrant sample.
Bratsberg et al. (2014) extend the analysis of patterns of labor market outcomes and social insurance claims to a larger set of migrant entry cohorts in Norway. Their results confirm previous findings of long-term weak performance and short labor market careers of immigrants from developing countries, with declining employment rates over time and rising dependence on the social security system. The same basic pattern holds for migrants who came to Norway as family migrants or refugees. Immigrants from Western countries, instead, perform better and their lifecycle patterns in terms of employment, earnings and welfare dependence resemble those of natives. Finally, the gap in labor market outcomes between the second generation immigrants and natives is lower than that found for first generation immigrants, although they find evidence of over reliance on disability programs by second generation immigrants compared to natives.

Research on welfare assimilation of migrants in Sweden reveals that, contrary to Norway, immigrants assimilate out of welfare dependency. Hansen and Lofstrom (2003) study differences in welfare utilization between immigrants and natives in Sweden over the period 1990-1996 and provide evidence suggesting that migrants’ welfare benefits utilization patterns become more similar to those of natives as immigrants spend time in the host country. In particular, refugee immigrants display significantly higher dependency rates on public assistance than other migrants, although their pace of assimilation is steeper. Despite evidence of assimilation, Hansen and Lofstrom (2003) report persistently higher dependency rates for immigrants and a gap that does not disappear even after 20 years spent in the host country.

Evidence from Germany, instead, reveals that foreign households display a lower probability of welfare utilization compared to natives, after controlling for observable socio-economic and demographic characteristics such as household’s head labor force status, family composition and home ownership (Riphahn 2004). Using several waves of the German Socioeconomic Panel (1984-1996) she finds that higher take up rates for foreign born families are driven by differences in socio-economic characteristics between native and foreign households. She also uncovers a positive trend in welfare take up by the immigrant population, indicating that welfare utilization increases with time spent in the new country. The latter suggests an undergoing process of assimilation into welfare dependency.

Another stream of research uses cross-sectional data to estimate the net contribution of immigrants to the fiscal system by simultaneously considering the expenditures and revenues side of the fiscal budget (see e.g. Borjas 1994, Dustmann et al. 2010, Dustmann and Frattini 2014, Ruist 2014).
Drawing information from the 1990 US Census, Borjas (1994) calculates the annual net fiscal contribution of immigrants in the US and finds that immigrants are net contributors to US public government finances. Borjas’ results, however, are rather sensitive to variations in the baseline assumptions and the positive fiscal contribution of immigrants turns into a net burden if the marginal cost of provision of public goods to the immigrant population is set to be strictly positive rather than zero. For the UK, Dustmann et al. (2010) assess the net fiscal contribution of immigration from Central and Eastern European countries (the A8 countries) which joined the EU in 2004 and show that they are not only less likely than natives to receive welfare benefits and to leave in social housing, but they are also more likely to be net contributors to the UK public finances by having relatively higher participation rates in the labor market and contributing relatively more in indirect taxes than natives. Dustmann and Frattini (2014) go a step further and estimate the net fiscal contribution of all immigrants residing in the UK over the period 1995–2011 and the fiscal contribution for 2001–11 of those cohorts arrived since 2000. Overall, immigrants are found to be less likely than natives to receive welfare state benefits or tax credits, and do not significantly differ in the probability of living in social housing. Important differences, however, emerge among immigrant groups depending on their country of origin and their time of arrival: immigrants from the European Economic Area (EEA) positively contribute to the UK public coffers during the period considered, meaning that they pay in taxes, on average, more than what they receive in benefits and transfers. The opposite is true instead for non-European immigrants, who are found to be a net burden, on average, for the UK government finances. Importantly though, more recent arrivals (i.e. immigrants entering after 2000) are found to be net contributors to UK government finances, independently of their country of origin. They are also less likely than natives to receive tax credits and government benefits. This is true also for migrants coming from the A10 countries which joined the EU after 2004. Ruist (2014) performs a similar static accounting exercise for European A10 accession migrants to Sweden and finds results close to those in Dustmann et al. (2010).

5.2 Dynamic models

Dynamic analyses are typically built upon a forward looking approach and involve a more comprehensive study of the contribution of the migrant population to the host country public finances, often taking into account the possibility of migrants returning home. This method allows for the estimation of the fiscal impact of future migration flows on the destination country. The main drawback, however, is the wide set of – sometimes strong - assumptions which must be made
regarding future fertility, employment, government tax rates and expenditures patterns (Rowthorn 2008).

Roughly speaking, dynamic models compute the net present value of the stream of future taxes and expenditures over the entire life cycle corresponding to a given cohort or flow of immigrants. Typical examples of this approach are two papers by Storesletten (2000, 2003), which consider the fiscal impact of immigration in the US and Sweden, two countries that differ in terms of the size of the public sector and generosity of the welfare system in particular with respect to pensions and health care.

The first paper (Storesletten 2000) develops a calibrated general equilibrium overlapping generations model and computes the net present value (NPV) to the government of admitting one additional immigrant to the United States, taking migrants’ skills and age at migration into account. The model allows for return migration, which is assumed to depend on the time spent into the host country but is not endogenized into the migrant’s decision making process, and for the portability of social insurance benefits from the host to the source country in case of return. The model predicts that comparing an initial situation which allows for migrants’ return to the extreme case of no outmigration would increase the government’s NPV profiles when admitting highly skilled migrants who are less than 49 years old, while reducing the NPV in the case of other migrant groups (old, unskilled etc.). All other groups are on the receiving end of the welfare state, and restricting their mobility would have an adverse impact on the NPV profile. This result is illustrated in Figure 13, which compares the effect of migration on the NPV pattern of high-skilled immigrants in the baseline return migration case (the solid line) with the opposite scenario of no return migration (the dotted line) and that of family migration (dashed line). The intuition for this result is that young, highly skilled workers are net contributors to the welfare state, and restricting their mobility will increase their overall fiscal contribution to the destination country.
Storesletten’s dynamic analysis of the fiscal impact of immigration concludes that skill selective immigration policies aimed at attracting highly qualified migrants may help the US dealing with an ageing population and result in a net positive contribution to the government resources. In particular, he claims that a desirable policy would involve the admission of 1.6 million 40–44 years-old high-skilled immigrants annually, given that the discounted gains from immigration reach their maximum with high-skilled immigrants within this age range. Storesletten’s results, however, rely on the assumption of random outmigration of immigrants and do not account for selectivity in outmigration flows while assuming the same earnings profiles for temporary and permanent migrants. In a more recent work, Kirdar (2012) models outmigration as endogenous and investigates the impact of immigration on the host country social insurance systems. His results for Germany show that not accounting for the selectivity of outmigration across age-at-entry groups leads to significant bias in estimates of NPV profiles of immigrants’ contributions.

Storesletten (2003) focuses instead on the Swedish experience, and develops an overlapping generations framework with a dynamic and detailed analysis of fiscal policy, but with fixed individual behavior over time, where immigrants can affect natives’ welfare only via government fiscal policies (i.e. labor force status, wages, propensities to consume and fertility behavior are treated as exogenous). Moreover, the baseline model assumes no return of migrants into their origin country and even when outmigration is taken into account in the robustness analysis, benefits portability is not allowed. Even in the Swedish case potential gains from immigration are found.
This is particularly true for immigrants who are 20 to 30 years old at time of arrival. Immigrants above 50 years of age and below 10, instead, are predicted to constitute a net burden on Swedish finances. While the qualitative effect of immigrant’s fiscal impact on the host country finances are similar for the US and Sweden, the size of the potential benefits from high skilled migration to Sweden are much smaller than in the US and this reflects the important differences in terms of labor market outcomes, fiscal burden and size of the welfare state between the two countries.

A second dynamic approach that has been applied to study the long run effect of immigration is based on the generational accounting technique. This approach assesses the redistribution of tax burden across generations by taking into account the lifecycle contributions made by current and future generations; it allows for an in depth analysis of the costs and benefits of immigration in terms of revenues and expenditures and for a comparison of the potential fiscal effects of alternative migration policies. The information needed, however, is substantial and involves reliable demographic forecasts, as well as data on the tax and transfers structure for each demographic group, detailed data and projections on government expenditures, information on the initial stock of public debt etc.

The findings from the numerous papers that have applied this methodology (see e.g. Auerbach and Oreopoulus 1999, 2000, Collado et al. 2004, Mayr 2005, Chojnicki 2013) indicate a net fiscal gain from immigration if immigrants are highly skilled and relatively young, but the magnitude of the effects depends on institutional features of the destination countries. Auerbach and Oreopoulus (1999, 2000) study the fiscal effects of immigration in the United States. They find little evidence of either a positive or negative effect of changes in the overall level of immigration on US public finances. Only when looking at the impact of skilled immigration they obtain clear-cut results: an increase in the share of skilled immigrants unambiguously improves the US fiscal position. Chojnicki (2013) carries out a similar exercise focusing on France. His findings indicate a slight positive effect in the long run, mainly driven by the continuous inflows of working age migrants and by the net positive contribution of the descendants of first-generation immigrants. The net gain from immigration is larger if the immigrants entering the country are highly qualified. The magnitude of the effects is however not enough to significantly reduce government fiscal imbalances.

A more sizable positive fiscal effect from immigration is found by Collado et al. (2004) who uncover substantial positive fiscal gain from immigration to Spain, irrespective of immigrants’ skill composition. Mayr (2005) also applies a generational accounting technique and finds evidence of a net positive fiscal gain from immigration to Austria under the assumption that the age structure and
fiscal characteristics of future inflows of migrants will remain similar to those of current migrants. The net positive effect is mainly driven by migrants’ relatively younger age structure and lower transfers during retirement age. The size of the gain, however, is found to be not sufficient to achieve inter-temporal fiscal balance,\textsuperscript{10} both in case of migration policies targeting the level of immigration or targeting its composition.

The immigrants’ impact on the government budget in the host country might have important policy consequences, which have also received some attention in the literature. Razin and Sadka (1999, 2000) propose an overlapping-generation model where each generation lives for two periods, two types of skills co-exist, and a pay as you go pension system is in place, which requires the employed young generation to finance retirement benefits for the elderly through income taxes. Under the assumption of free capital mobility\textsuperscript{11} the model predicts a net positive gain from migration for both low and high income groups (i.e. low and high skilled groups) and young and old age groups of individuals living at the time of the immigrant flow. In their dynamic model, the native population is better off even if the migration flow consists of low skilled migrants who are net beneficiaries of the social security system in the two periods they live in (Razin and Sadka 1999). This is possible since, in an ever-lasting economy, the potential net burden imposed by immigrants on the native population may be indefinitely shifted onwards to the next generation. In other words, while a static perspective can only account for the burden imposed by current low skilled migrants on the welfare system in a given time, a dynamic framework is able to account for additional implications of immigration on the welfare state of the host country (Razin and Sadka 1999). From a political economy perspective these conclusions imply that, in a dynamic framework with capital mobility, the native population of a small open economy would favor any type of migration and ask for as many migrants as possible in the equilibrium. This holds under the main assumption that factor prices are fixed, meaning that migrants’ inflows cannot affect natives’ wages or employment levels. In Razin and Sadka (2000) this assumption is relaxed and migration is allowed to affect factor prices and decrease the wages of low skilled native workers. When this is allowed for, an anti-immigration sentiment may arise and weaken or even overturn the positive effects of migration: the migrants’ net contribution may turn into a loss for some native income groups of both current and future generations.

\textsuperscript{10}The inter-temporal budget constraint of the government requires that the present value of future net tax payments to the public sector, whose burden is on present or future generations, must be sufficient to finance the present value of aggregate net debt.

\textsuperscript{11}This assumption insures that factor returns are not affected by migration.
Open issues

The above section uncovers questions that are still under research in the literature. The analysis of the fiscal impact of immigration in destination countries still does not systematically include non-random return or circular migration when modelling migrants’ net contributions to the host country public finances. Moreover, much effort is required to improve the reliability of dynamic models of the fiscal impact of immigration – especially generational accounting models – which are still too sensitive to even small changes in the underlying assumptions.

6. Migration and skill shortages

Rapid population ageing contributes to the shrinking of labor force in Western countries. Immigration could - at least partially - offset this trend by injecting new young workforce into the host countries labor markets. In this section we summarize research that is concerned with how the inflow of foreign workers can help to fill labor shortages and bring about skills that are in short supply in rich Western European countries, thus relaxing important bottlenecks that lead to inefficiencies in the production of goods and services.

In particular, we highlight the difficulties in providing a unique definition of shortages and the various approaches currently adopted to detect them. We discuss whether immigration may help to fill gaps in workforce - especially of highly skilled - and present the main immigration policies adopted by destination countries. We focus on Europe and its need for a more coordinated action towards the development of supra-national recruitment policies of highly qualified workers in order to gain ground in the race for attracting the best and the brightest talents around the world. We then shift our attention to the beneficial effects of migrants filling sub national shortages and stress the difficulties in the viability of policies tackling local areas or specific sectors. Finally, we highlight the long run available alternatives to immigration as a solution to bottlenecks in destination countries labor markets.

TO BE COMPLETED…
7. International migration and the health care sector

In the previous section we have argued that migration can be a short run solution to skill shortages affecting destination countries labor markets. We turn now to consider two specific sectors, in which immigration has played an increasingly significant role – healthcare and old age care.

We start by investigating the role of immigrants as suppliers of those services (subsections 7.1 and 7.2), and turn next to consider their impact on the demand side of this market (subsection 7.3). Empirical analyses show that in the short run there is no evidence of adverse effects of immigration on the labor market outcomes of natives in the healthcare sector (subsection 7.1). In the long run, wage effects continue to be negligible, but there is some evidence of a crowding out of natives. As for the provision of old age care, the data suggest a growing importance of immigration in this area, but there is little systematic evidence on the impact of foreign workers on native labor market outcomes (subsection 7.2). The last part of this section (subsection 7.3) considers instead immigrants’ demand for health care services. While the patterns differ significantly across countries, immigrants appear to systematically underutilize preventive medical services, whereas they tend to over-utilize emergency care services.

7.1 International migration of health care professionals

Migrant workers are playing an increasingly important role in the health care sector. Immigration is often seen as the quickest and cheapest solution to perceived short-term shortages in the availability of medical staff. Foreign trained workers can also be a useful tool to address local shortages in underserved and/or rural areas or in case of shortages in specific medical specialties, e.g. those related to an ageing population. Moreover, Western countries are starting to use foreign health care professionals to address the needs of an increasingly diverse population whose health needs may be more efficiently met by an ethnically diverse medical staff (see Grignon et al. 2013 for a recent review).

Major supplier of health care workers are African countries, India and the Philippines, whereas destination countries who have historically recruited large numbers of foreign trained health professionals are Australia, Canada, the UK and the US (Bach 2003). Recent data collected by the World Health Organization (WHO 2014) show that the employment of immigrants in the health industry is becoming more widespread (Table 5). By 2008, almost half of the nurses employed in Ireland were foreign trained, and the same is true for over a third of the doctors registered there. In New Zealand almost 39% of the doctors are foreign trained, and so are almost a quarter of the
nurses. At the same time, the US continues to remain the main destination of medical professionals, with over 100 thousand foreign trained medical doctors and almost a quarter of a million of foreign trained nurses. Important differences exist though among the OECD countries for which data are available. In particular Nordic European countries report very small numbers of registered foreign medical professionals, and in many Eastern European countries the number of foreign trained professionals is negligible.

Table 5: Foreign-trained (or foreign) nurses and doctors in selected OECD countries, based on professional registries

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Share (%)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>2008</td>
<td>530</td>
<td>0.5 National Supervisory Authority for Welfare and Health (Valvira)</td>
</tr>
<tr>
<td>Pol2an</td>
<td>2005</td>
<td>3479</td>
<td>1.4 BIG Register (Beroepen in de Individuele Gezondheidszorg)</td>
</tr>
<tr>
<td>Sweden</td>
<td>2007</td>
<td>2585</td>
<td>2.6 Swedish National Board of Health and Welfare</td>
</tr>
<tr>
<td>United States</td>
<td>2004</td>
<td>100791</td>
<td>3.5 National Council of State Boards of Nursing(NCSBN)</td>
</tr>
<tr>
<td>Denmark</td>
<td>2005</td>
<td>5109</td>
<td>6.2 National Board of Health, Nursing Adviser</td>
</tr>
<tr>
<td>Canada</td>
<td>2007</td>
<td>20319</td>
<td>7.9 CIHI Workforce Trends of Regulated Nurses in Canada</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2001</td>
<td>50564</td>
<td>8.0 Nursing and Midwivery Council</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2008</td>
<td>9895</td>
<td>22.1 Ministry of Health/Nursing Council of New Zealand</td>
</tr>
<tr>
<td>Ireland</td>
<td>2008</td>
<td>37892</td>
<td>47.1 An Bord Altranais</td>
</tr>
<tr>
<td>Doctors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>2008</td>
<td>2271</td>
<td>1.5 Federal Public Service Health, Food Chain Safety and Environment</td>
</tr>
<tr>
<td>France</td>
<td>2005</td>
<td>7058</td>
<td>1.6 DREES, DELI</td>
</tr>
<tr>
<td>Portugal</td>
<td>2008</td>
<td>2037</td>
<td>3.6 Ordem dos Enfermeiros</td>
</tr>
<tr>
<td>Italy</td>
<td>2008</td>
<td>33364</td>
<td>9.4 Federazione Ipasvi</td>
</tr>
<tr>
<td>Poland</td>
<td>2005</td>
<td>734</td>
<td>0.6 Polish Chamber of Physicians and Dentists</td>
</tr>
<tr>
<td>Austria</td>
<td>2008</td>
<td>1556</td>
<td>4.1 Austrian Medical Chamber</td>
</tr>
<tr>
<td>France</td>
<td>2005</td>
<td>12124</td>
<td>3.8 Ordre des Médecins</td>
</tr>
<tr>
<td>Denmark</td>
<td>2008</td>
<td>1282</td>
<td>6.1 National Board of Health, Labour Register for Health Personnel</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2006</td>
<td>3907</td>
<td>6.2 BIG Register (Beroepen in de Individuele Gezondheidszorg)</td>
</tr>
<tr>
<td>Belgium</td>
<td>2008</td>
<td>289</td>
<td>6.7 Federal Public Service Health, Food Chain Safety and Environment</td>
</tr>
<tr>
<td>Finland</td>
<td>2008</td>
<td>2713</td>
<td>11.7 National Supervisory Authority for Welfare and Health (Valvira)</td>
</tr>
<tr>
<td>Canada</td>
<td>2007</td>
<td>14051</td>
<td>17.9 CIHI, SMDB Scott's Medical Database</td>
</tr>
<tr>
<td>Sweden</td>
<td>2007</td>
<td>6034</td>
<td>18.4 Swedish National Board of Health and Welfare</td>
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<tr>
<td>Switzerland</td>
<td>2008</td>
<td>6659</td>
<td>22.5 FMH Swiss Medical Association</td>
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<tr>
<td>United States</td>
<td>2007</td>
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<td>25.9 American Medical Association</td>
</tr>
<tr>
<td>Unite d Kingdom</td>
<td>2008</td>
<td>48697</td>
<td>31.5 General Medical Council</td>
</tr>
<tr>
<td>Ireland</td>
<td>2008</td>
<td>6300</td>
<td>35.5 Irish Medical Council</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2008</td>
<td>4106</td>
<td>38.9 New Zealand Ministry of Health, Information Directorate</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>2004</td>
<td>139</td>
<td>0.8 Ministry of Health of Slovak Republic</td>
</tr>
<tr>
<td>Japan</td>
<td>2008</td>
<td>2483</td>
<td>0.9 Statistic Bureau Ministry of Internal Affairs and Communication</td>
</tr>
<tr>
<td>Greece</td>
<td>2001</td>
<td>897</td>
<td>2.5 General Secretariat of the National Statistical Service of Greece</td>
</tr>
<tr>
<td>Italy</td>
<td>2008</td>
<td>14747</td>
<td>3.7 AMSI Associazione Medicidi Origine Straniera, based on ENPAM</td>
</tr>
<tr>
<td>Germany</td>
<td>2008</td>
<td>21784</td>
<td>5.2 Bundesärztekammer</td>
</tr>
<tr>
<td>Portugal</td>
<td>2008</td>
<td>4400</td>
<td>11.1 Immigration Observatory, ACID1, I.P.</td>
</tr>
<tr>
<td>Norway</td>
<td>2008</td>
<td>3172</td>
<td>15.9 Den Norske Legeforening</td>
</tr>
</tbody>
</table>

One key feature that distinguishes the health care industry from other skilled labor intensive sectors is the important role played by the rules and regulations that shape its activities and who can gain employment as a doctor or as a nurse.

The arrival of migrants’ medical staff has both short and long run consequences on the host country labor market. In particular, it may affect the employment and wages of natives in the sector and importantly, it might have a significant impact on the overall quality of the health care services provided.

As for the short term labor market effects of immigration, the main evidence so far comes from the US. Combining data from the National Survey of Registered Nurses and data from the Current Population Survey for the period 1995 - 2008, Schumacher (2011) studies earnings differentials between foreign and native nurses and the effects of foreign nurses’ immigration on native’s wages. He finds evidence of a negative wage gap only for recent immigrants and of a very small, if any, negative effect of immigration on native wages. Based on this evidence he concludes that migration represents a viable strategy to address short term shortages in the nursing sector, with limited effects on native workers (Schumacher 2011).

Cortés and Pan (2014) also analyze the labor market impact of foreign health professionals, but from a long run perspective, focusing on how foreign trained nurses in the US affect the employment and wage of their native counterparts. Following Card’s (2001) spatial correlation approach12, they exploit the variation in the distribution of foreign nurses across US cities and across labor market experience groups within cities, and find a large displacement of native nurses and provide evidence that the crowding out is due to natives changing occupation or to individuals deciding not to enter the nursing profession at all. The overall wage effect is, instead, negligible and this can be partly explained by the wage rigidity that characterizes the health sector. Nonetheless, the authors suggest that immigration might lead to a deterioration in working conditions, and this idea is supported by survey based evidence.

Given the specific status of the health care industry, a particularly important question that is often at the heart of the debate on the migration of health care professionals concerns the “quality” of the human capital supplied by migrants. Cortés and Pan (2015) tackle this important issue by comparing foreign and native nurses in the US using Census data covering the period 1980 - 2010. Interestingly, they find a positive wage gap for Filipino nurses, whereas no significant wage

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12 Using U.S. Census data from 1990, Card (2001) studies the impact of immigration on the occupation-specific wages and employment rates in the host country local labor markets by exploiting variation in the concentration of immigrants across specific skill groups and across 175 metropolitan statistical areas (MSAs).
premium is found for nurses educated in other countries. Moreover, the positive wage gap for Filipino nurses cannot be explained by socio-demographic or economic characteristics, thus suggesting that this is driven by unobserved positive human capital attributes. Cortes and Pan (2015) conclude that the “high quality” of Filipino nurses is likely to be driven by a strong positive selection into the profession in the country of origin. Similar effects have also been found by Huang (2011) using data from the National Sample Survey of Registered Nurses.

Besides selection in the country of origin, the high “quality” of foreign health care professionals is likely to be driven also by the strict rules put in place in immigrant destination countries, which severely limit access to health care professions and often discriminate against foreigners. Several papers have tried to tackle the question of the extent to which these policies are in place to respond to legitimate public concerns, or rather as a response to pressures by native physicians to limit competition in the sector. The main evidence also in this case comes from the United States.

Glied and Sarkar (2009) focus on the institutional factors affecting the size of the International Medical Graduate (IMG) population in the US, and assess the role played by the US medical profession in shaping it. To this end, they construct estimates of the stringency of the tests required for foreign educated professionals over time and combine it with evidence on the underlying IMG cohort characteristics taken from Census data. They then investigate the quality of different cohorts of foreign graduates and construct an indicator for the “rate of return” to the medical profession over time, using yearly data from the Current Population Survey and data from the Socioeconomic Monitoring Surveys collected by the American Medical Association. Interestingly, their analysis suggests that in setting the pass rate for the medical licensing examination required for the IMGs, the medical profession tries to maintain a constant rate of return to the human capital investment of domestic doctors. The role played by medical associations in shaping access to the profession has been investigated also in a recent paper by Peterson et al. (2014), exploiting US cross-state variation in licensing requirements for immigrant physicians over the period 1973-2010. The authors find that states with self-financing - rather than state government - funded medical boards end up with stricter rules for migrant licensing, and in particular foreign trained doctors require lengthier residency training in the US in order to gain access to the profession. The role played by relicensing requirements in creating rents for native health professionals is analyzed also by Kugler and Sauer (2005) using quasi-experimental data from Israel.

The migration of health care professionals has received considerable attention also in the development literature and much has been written to assess whether it creates a “brain drain” or a “brain gain” for the source country. While this issue is very important, it goes beyond the scope of
this survey and we refer the interested reader to the excellent review by Docquier and Rapoport (2012).

7.2 International migration of old-age carers

As discussed in section 2, the most recent demographic projections indicate that, by 2060, the share of people aged 65 and over will rise from 18% to 28% of the EU population, whereas the share of people aged 80 and over is expected to increase from 5% to 12% of the population (EC 2014a).

As a result, the demand for long term care (LTC) is expected to rise significantly and it is very likely that foreign old age care workers will play a significant role in addressing the growing needs of an elderly population. Table 6 shows long term care expenditures as percentage of GDP for EU-28 member states as forecasted by the Ageing Working Group (AWG) for the European Commission. All the European countries considered will experience an increase in long term care spending by 2060, with Northern countries such as Belgium, Denmark, Finland, Sweden and the Netherlands being particularly affected. The magnitude of these effects varies considerably though, and Eastern European countries, such as Bulgaria and Estonia are almost not impacted at all.

<table>
<thead>
<tr>
<th>Country</th>
<th>2015</th>
<th>2030</th>
<th>2045</th>
<th>2060</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>2.6</td>
<td>3.2</td>
<td>4.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>0.8</td>
<td>1.1</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Denmark</td>
<td>4.6</td>
<td>5.8</td>
<td>7.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Germany</td>
<td>1.6</td>
<td>2.0</td>
<td>2.7</td>
<td>3.1</td>
</tr>
<tr>
<td>Estonia</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
</tr>
<tr>
<td>Ireland</td>
<td>1.2</td>
<td>1.5</td>
<td>2.1</td>
<td>2.6</td>
</tr>
<tr>
<td>Greece</td>
<td>1.5</td>
<td>1.7</td>
<td>2.1</td>
<td>2.6</td>
</tr>
<tr>
<td>Spain</td>
<td>0.8</td>
<td>0.9</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>France</td>
<td>2.4</td>
<td>2.8</td>
<td>3.8</td>
<td>4.2</td>
</tr>
<tr>
<td>Italy</td>
<td>2.0</td>
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<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Latvia</td>
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<td>0.7</td>
<td>0.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Lithuania</td>
<td>1.3</td>
<td>1.4</td>
<td>1.9</td>
<td>2.3</td>
</tr>
<tr>
<td>Luxemburg</td>
<td>1.1</td>
<td>1.5</td>
<td>2.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.9</td>
<td>1.0</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Malta</td>
<td>0.7</td>
<td>1.2</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4.1</td>
<td>5.4</td>
<td>7.2</td>
<td>7.9</td>
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<tr>
<td>Austria</td>
<td>1.7</td>
<td>2.1</td>
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<td>Portugal</td>
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<tr>
<td>Romania</td>
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<td>Slovenia</td>
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<td>1.9</td>
<td>2.6</td>
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</tr>
<tr>
<td>Slovakia</td>
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<tr>
<td>Finland</td>
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<td>Sweden</td>
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<td>4.8</td>
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</tr>
<tr>
<td>United Kingdom</td>
<td>2.1</td>
<td>2.3</td>
<td>2.5</td>
<td>2.7</td>
</tr>
</tbody>
</table>
Norway 3.8 4.8 6.5 7.7
EU27 2.0 2.3 3.0 3.4
EA17 1.9 2.3 3.0 3.4


While the international flow of highly skilled health professionals has received a lot of attention in the literature, much less is known about the migration of old-age care workers. Employment in the LTC sector continues to be female dominated in most EU Member States (Bettio and Verashchagina 2010). However, different patterns in the division of care work between the state, the private market and the family have given rise to a variety of models of care, in which foreign migrants play a very different role.

In what follows we provide an overview of the different long term care regimes, and we compare their main features focusing on the role of migrants and their employment conditions. While little is known on the direct effect of immigrant workers on natives employed in the same sector, a few studies have highlighted the impact of migration on the labor supply decisions of younger and possibly better educated Europeans, who would have been otherwise in charge of caring for their elderly family members.

Models of long-term elderly care

The role played by migrants in LTC provision varies with the destination country traditions and institutional contexts, and three main approaches have been identified in the literature. We consider next the main features of each of them.

Broadly speaking, a ‘migrant in the family’ model characterizes Southern European countries. In this context, care for the elderly is typically not delegated to private or public institutions and remains instead the responsibility of the family (see Bettio et al. 2006), and Italy is a fitting example. A large demand for care workers, and a limited supply of native providers, has led many Italian families to rely heavily on low skilled migrant workers to manage family care needs. A majority of the workers in this sector come from Eastern European countries (Van Hooren 2012). They are typically middle-aged females, with children and family left in their origin country. This type of migration is often temporary or rotational, and sees migrant women visiting regularly their origin country to keep ties with their children and families left behind (Bettio et al. 2006). Migrants’ employment conditions vary substantially, and are highly sensitive to their legal status (Van Hooren 2012).
Two additional models of care are common in other Western European countries. The United Kingdom well represents the so called ‘migrant in the market’ case, where access to publicly provided services is means tested and high-income people often have to purchase care services on the market. Within this framework, migrants are often employed in the private formal sector, rather than in the informal or public sectors. Foreign workers employment conditions, however, are found to be on average worse than those of natives and of carers employed in the public sector. In particular, they are more likely than natives to work longer hours and do night shifts (Van Hooren 2012).

A third model is prevalent in the Netherlands and in Nordic countries, where citizens are entitled to publicly financed services. Care services are provided by private organizations, working in close collaboration with the government. In this context the incidence of immigrants is much lower than in the other two regimes and their employment conditions are typically better.

Care workers and high skilled natives’ labor supply

Besides directly addressing specific needs for long term elderly care, the availability of immigrant care workers – and more generally of low skilled domestic workers - is likely to impact native labor supply, and in particular the employment decision of highly skilled women. The available empirical evidence, building both on US and European data indicates a positive impact of low-skilled immigration on the labor supply of high skilled native women.

Cortés and Tessada (2011) provide evidence from the US, using data from the 1980, 1990 and 2000 Census. Drawing from Card’s (2001) instrumental variables approach, they find a positive and significant effect of low skilled immigration on the number of hours worked per week by women in the top quartile of the female wage distribution. They also show that this positive effect decreases in size and significance for women at lower points of the wage distribution, becoming insignificant for those with wages below the median. Importantly, immigration affects mainly the intensive margin, i.e. the number of hours worked, while no significant effect is found on the extensive margin, that is on the probability to enter the labor market. The former effect is particularly large for occupations demanding long hours of work, like law, medicine and research. Interestingly, the authors find that the increase in labor supply is accompanied by a reduction in the time devoted to household work.

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13 Card’s (2001) instrumental variables approach exploits the tendency of immigrants to locate in areas with historical enclaves of earlier immigrants from the same country of origin to account for the endogeneity of immigrants’ location choices to pull socioeconomic factors in areas of destination.
Similar results have been found, using Italian data, by Barone and Mocetti (2011) for the period 2006-2008, adopting a spatial correlation methodology. Once again, the availability of female immigrants specialized in household production increases the domestic supply of female skilled workers, and also in this case the effect takes place through changes in the intensive margin.

Farrè et al. (2011) analyze the recent Spanish experience, and while they also find a positive impact of female immigration on the labor supply of college educated women with family responsibilities, their findings are driven mainly by an effect on the extensive rather than the intensive margin. In particular, the presence of immigrants allows native women to return to work earlier after childbirth, and to remain in employment.

**7.3 Immigrants’ demand for health care**

As migrants represent an increasing proportion of the European population, we need a better understanding of their health patterns and their access to health care. For many European health systems, equity in access to health services remains a fundamental objective and understanding the impact of immigrant flows on the sustainability of existing public health care systems is an important policy priority.

In what follows we review the main results from the empirical literature on the differences in access to health services by the immigrant and native populations, focusing on the use of primary care, preventive care, specialists, hospitalization and emergency ward services. Given the lack of detailed systematic data, the results are highly heterogeneous and depend on both the specific health care service considered and the country studied. Still, some general patterns can be highlighted, revealing that immigrants systematically under-utilize preventive medical services, especially prenatal care, compared to the native population. On the other hand, they report higher use of emergency services, which is often the result of barriers in the access to ordinary health care services.

*Models for the demand for health care*

Traditional models for the demand for health care have highlighted the main factors able to explain differences in access to health services by groups of individuals (see e.g. Andersen 1968, 1995, Grossman 1972). Predisposing characteristics (such as socio-demographic characteristics and health beliefs), enabling factors (such as personal/family and community characteristics like income and health insurance systems), need variables (both perceived and assessed needs) and characteristics of the health care system have been identified as the main drivers of the demand for health services.
Health care demand is a derivative of migrants’ health. Many studies report that immigrants have a good health status at their arrival in the host country (see e.g. Fennelly 2007, Kennedy et al. 2006). The so-called ‘healthy migrant effect’, however, tends to disappear once individuals’ demographic characteristics such as age are accounted for. Moreover, once in the host country, immigrants’ exposure to risk factors such as poverty and exclusion may deteriorate their mental and physical health status (see WHO 2010).

Evidence of immigrants’ health is scarce given the lack of exhaustive and cross-country comparable data on health status (see e.g. Ingleby 2009, Nielsen et al. 2009). Where data are available, large heterogeneity is found in migrants’ health status depending on age, gender, country of origin, legal status and economic wellbeing (see Rechel et al. 2011). Overall, however, migrants appear to be particularly vulnerable to communicable diseases (see Carballo et al. 2009a), report higher rates of accidents at work and work-related diseases (see Carballo et al. 2009b) and a higher incidence of mental illnesses (see Ingleby 2008) compared to the native population. Evidence of higher maternal and infant mortality of non-western immigrants compared to natives is also found in some destination countries (see the overview by Bollini et al. 2009, Carballo et al. 2009b). The higher vulnerability of migrants to specific diseases can be partly explained by migration-related traumatic events, health conditions in the country of origin and migrants’ over-representation in occupations characterized by low wages and poor working conditions (see the overview by Gushulak et al. 2010).

The empirical literature also emphasizes a substantial heterogeneity in access to health care across countries, and much emphasis has been put on the health care provision model.

In the United States, where the health care provision is dominated by the private sector and health insurance coverage is not universal, the empirical literature has looked at both differences in health insurance take up between migrants and natives, and at their respective use of health care services (see e.g. Ku and Matani 2001, Lucas et al. 2003, Goldman et al. 2005, Kao et al. 2010, Derose et al. 2011, Vargas-Bustamante 2014). In an interesting study Akresh (2009) examines the utilization patterns of Asian and Hispanic immigrants included in the 2003 New Immigrant Survey (NIS) and finds that duration of residence, knowledge of host country language, and being insured increase immigrants’ access to health care services. This evidence confirms previous findings by Leclere et al. (1994) using data from the 1990 National Health Interview Survey.

Differently from the US, health care provision in Europe is dominated by a model based on universal coverage, even if differences exist concerning the ultimate providers of health care.
services. Most EU Member States extend health coverage to third country nationals,\textsuperscript{14} but the empirical evidence suggests that inequalities in access and health status between migrants and natives are pervasive also in Europe (see e.g. Ingleby et al. 2005, Mladovsky 2007), even though the patterns differ substantially across countries. Sole´-Auro´ et al. (2012) carry out a cross-country analysis of the patterns of utilization of health services among elderly migrants and natives in eleven European countries using the 2004 round of the Survey of Health, Ageing, and Retirement in Europe (SHARE), which focuses on individuals aged 50 years and above. Immigrants are found to significantly over utilize health care services compared to natives, even after controlling for socio-economic and demographic characteristics. Differences in utilization are almost halved when need factors are included in the analysis, and this highlights the role played by worse health status of old age migrants compared to natives in explaining observed differences in access to health care services. Macro-economic factors at the host country level, such as relative health expenditures and the structure of the health system, also affect differential health care usage between the two groups (Sole´-Auro´ et al. 2012).

Other studies focus on specific type of health services. The evidence on the usage of general practitioners’ health care services does not exhibit a clear pattern: some papers emphasize a overutilization by the immigrant population (see e.g. Smaje and Le Grand 1997, Reijneveld 1998, Winkellman 2002, Morris et al. 2005, Uiters et al. 2006) being almost completely explained by gender and health status, other researchers find no significant differences in primary care use between migrants and non-migrants (see e.g. Antón and de Bustillo 2010, Wadsworth 2013) or even under-utilization of primary health care services by migrants (see e.g. Gimeno-Feliu et al. 2013). Overall these studies suffer from a lack of detailed, comparable data across countries, which make it difficult to draw a clear picture.

A similar inconclusive picture emerges also from the study of the usage of specialist services. For instance, evidence from Spain suggests that immigrants’ under-utilize specialists services compared to natives, (see e.g. Rubio 2008, Antón and de Bustillo 2010). Studies carried out using Dutch data

\textsuperscript{14} The differences in health care entitlements vary according to migrants’ legal status and across countries (see Pace 2011). Immigrants’ access to health services in the host country often varies a lot depending on whether migrants are living in the country legally or illegally and whether they are asylum seekers rather than labor migrants. In particular, many EU member states do not guarantee illegal immigrants full access to health care services: some EU member states have recently tightened access to health care in order to be able to exclude undocumented immigrants even from emergency wards services, others limit their access to health services only in case of emergency treatments, while only France, Italy, Portugal and the Netherlands allow irregular migrants almost full access to health care services under proof of identity or residence (for a comprehensive overview of rights granted to undocumented migrants in the EU see Suess et al. 2014). Legal restrictions to access to health care are in place also for asylum seekers which are often guaranteed access to emergency services only (see e.g. Norredam et al. 2006).
offer contrasting results: for instance Reijneveld et al. (1998) find no overall differences between migrants and non-migrants use of specialists visits, whereas Uiters et al. (2006) point out that migrants are more likely to use specialist services.

Similarly contrasting results are found also when it comes to the utilization of hospitalization services. Reijneveld et al. (1998) find evidence of over-utilization in the Netherlands, and similar results have been obtained by Cacciani at al. (2006) on specific hospitalization causes using data on discharges from hospitals collected in Italy. Antón and de Bustillo (2010), instead, find no significant differences in hospital stays using Spanish data.

A consistent pattern emerges instead when it comes to access to preventive care. All the existing empirical evidence is consistent with the existence of barriers to access to preventive services for migrants, especially in the case of women and undocumented migrants. Migrant women are found to have difficulties in accessing prenatal care services as well as cancer screenings (see e.g. Webb et al. 2004, Wolff 2008, McCormack et al. 2008, Moser et al. 2009, Price et al. 2010).

Similarly, the existing evidence indicates that migrants tend to over utilize emergency services compared to natives. This is true for instance in the case of the Denmark (Dyhr et al. 2007) and Spain (Cots et al. 2007, Rubio 2008, Antón and de Bustillo 2010).

Open issues

The studies we have reviewed highlight that we have a good understanding, at least for some countries, of the effect of immigration on the supply of skilled healthcare professionals, and on how they impact the destination country labor market. Much more work is instead needed to understand the impact of LTC workers, and in particular, we need better individual level data on both the migrants themselves and the native household benefitting from their services. Given the often informal nature of work arrangements in this area, this will not be an easy task. As for the analysis of the impact of migration on the demand side of healthcare services, a large array of studies exist, but there is clearly a need to improve the cross-country comparability of the data used in the analyses, as to better understand the sources of the significant differences reported in the various studies we have reviewed.

8. The Floridization of Europe – Old age North-South migration

The relatively recent phenomenon of amenity – led migration of retirees from Northern European towards Mediterranean coastal areas is likely to have important consequences on the demographic
structure, healthcare demand and provision and more generally the working of welfare states in both source and destination countries. Little systematic evidence exists on intra-European old age migration, but several studies have considered instead late age migration within the United States. We will review this evidence, which will help identifying the important questions that need to be addressed in the European context. In subsection 8.1 we review the existing evidence on the drivers of old age migration. Besides location specific amenities, such as a mild climate, the literature emphasizes how elderly decisions to migrate are influenced by tax and welfare policies both in their origin and destination and by the portability of social security benefits. We turn next to consider the effects of retirement migration on destinations (subsection 8.2). Existing studies indicate that retirement migrants make a positive contribution to the host economy, especially by increasing local demand and tax base. However, in the long run, migrant retirees may increase the demand for health care and long-term care services. Knowledge of retirees’ complete migration trajectories is needed to provide robust estimates of the long-term economic effects of retirement migration.

8.1 Determinants of old-age migration

A useful conceptual framework to understand the main forces at play in shaping old age migration decisions has been developed by Litwak and Longino (1987). Three main stages are identified: the first occurs at retirement, and the migration decision is driven by the maximization of utility, which depends upon environmental and lifestyle amenities. At this stage migrants are likely to be married, in good health and wealthy. The second stage is characterized by a decline in the health status and the potential loss of the spouse. Migration is mainly driven by the need to migrate back to the origin country to be close to family. Finally, in the last stage the migrant needs permanent care, the health status is worsened and the individual moves into structures providing formal care to the elderly.

Evidence on the determinants of elderly migration reveals that socio-economic and demographic characteristics play an important role. Differences in late age migration patterns are also determined by age at migration, by distance moved, as well as by consumption preferences and fiscal factors (see Sander et al. 2010).

Conway and Houtenville (1998) develop a theoretical model for elderly migration which takes into consideration the role played by government policies, with a focus on state or local level fiscal policies. By estimating outmigration and in-migration equations, the authors suggest that the public sector is an important determinant of elderly migration and conclude that state government public expenditures on education, as well as crime levels and taxation on property and income are important determinants of elderly migration behavior. Gale and Heath (2000) extend Conway and
Houtenville’s model by decomposing state revenues and spending. Interestingly, the authors find that the elderly migrants are more likely to move towards states where the costs of public government policies rely mainly on individuals who are still active in the labor market (Gale and Heath 2000). The composition of local revenues and spending is found to play an important role also at the county level (Duncombe et al. 2001). In particular, elderly migrants are found to be repelled by inheritance, property, sales taxes, as well as by government spending on welfare and housing. They are instead attracted by locations characterized by relatively high public expenditures on public safety and recreational facilities (Duncombe et al. 2001).

In order to analyze the role played by age-related heterogeneous effects, some empirical studies divide the elderly population into subgroups. Conway and Houtenville (2003) examine patterns of elderly migration by age groups using data from the 1990 US Census. Younger elderly migrants location decision is mainly affected by characteristics of the location of destination, such as specific amenities, climate and government fiscal policies; whereas older migrants are more likely to react to push factors driving them out of their origin state, such as income and property taxes and the cost of living in their host country.

Among the main determinants of elderly migration, the issue of the portability of social security benefits between source and destination plays a key role affecting for instance how return migration (see section 4) impacts the fiscal cost of aging in destination countries (see section 5).

Portability is defined by Holzmann and Koettl (2014) as a mechanism able to grant and transfer social security rights independently of an individuals’ country of residence, citizenship status or current or previous occupation in the labor market. As pointed out by Holzmann et al. 2005, Holzmann and Koettl 2014, the redistributive component within each social benefit is the main driver behind the observed difficulties in terms of portability. The separation and identification of each component of a benefit is thus fundamental to make the pre-funding component readily transferable and set up bilateral or multilateral agreements to coordinate on the mobility of the redistributive component (Holzmann and Koettl 2014).

Countries which rely on defined contribution social security systems are less touched by the issue of portability, whereas the problem is particularly severe for European countries, which have traditionally relied on defined benefit schemes and where the welfare state is relatively more generous.

This is true even within EU member countries, where uncertainty remains concerning the entitlements of family-oriented and amenity-seeking international retirement migrants. International
migrants who move for work reasons and then decide to retire in the host country have their portability rights more clearly regulated and are in a better position than those who decide to migrate after retirement (see e.g. Ackers and Dawyer 2004, Dwyer and Papadimitriou 2006). Under EU regulation, migrants’ social status and rights to claim welfare benefits in the host country strongly depend on their connections with the host country labor market. In particular, the right to reside in the host country by economically inactive individuals is constrained by a ‘resources requirement’ according to which migrants must provide proof that they have enough resources not to become a burden for the host country welfare state. At the same time, elderly migrants’ decision to return back home after some time spent in the host country may not entitle them to the rights they could have enjoyed in their origin country before departure, since entitlement to specific forms of benefits may require proof of habitual residence (Dwyer and Papadimitriou 2006). This translates into large numbers of migrant retirees which do not regularize their position since they fear the difficulties in reversibility of the process if at some point they decide to migrate back to their origin country. Moreover, elderly migrants fear that by regularizing their position they may lose some of the benefits they would be otherwise entitled to (see Dwyer 2000 and Legido-Quigley and Laparra 2007).

8.2 Effects on the host country economy

Late age migration flows might have significant effects on the host country economy, but little systematic evidence exists on this issue. Most of the existing studies focus on the US, and have mainly considered the short run, rather than the long run effects of elderly migration (Serow 2003).

Overall, late-age migration appears to have positive effects on the destination’s economy, at least in the short run, and some US sunbelt and coastal states have progressively adopted aggressive policies to attract wealthy and relatively young retirees (Haas and Serow 2002). The positive effects for the host communities are mainly associated with the increases in demand and tax payments. However, in the long run, migrant retirees may increase the demand for health care and long-term care services in particular. The net effect on the destination’s public finances has not yet been exhaustively studied, even though some attempts have been made, by separately considering old age and young age retirees. In particular, using data from the Bureau of Labor Statistics’ Consumer Expenditure Survey Stallman at al. (1999) find an overall positive fiscal impact of both young and

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15 Article 1 of the European Union Council Directive 90/365 limits the right to reside to economically inactive persons by two important conditions: “...[that they] are covered by sickness insurance...[and]...have sufficient resources to avoid becoming a burden on the social assistance system of the host Member State during their period of residence.”
old elderly migrants, with the rise in local government expenditures being covered by the increased revenues, even in the case of older elderly.

To reach more general conclusions on the long term economic effect of retirement migration, further research is needed. In particular, more information on whether elderly migrants return back to their origin country once they have to rely on family or formal assistance should be made available and included in the analysis.

Open issues

Even if most observers expect intra EU amenity-led migration to become increasingly important over the coming decades, very little is known on who migrates and on what are the effects of elderly European migration on the destination countries. To tackle this important policy issue, a systematic data collection exercise is needed, that would allow tracing the entire migration history of European individuals.

9. Conclusions

The demographic developments in Europe and beyond, the rapid increase of population flows, both within Europe and between Europe and the rest of the world, and their consequences for the provision of healthcare services raise a host of very important policy questions, which have been reviewed in this survey. Several important elements emerge from our discussion.

First, most of the issues we have tackled in this survey have been considered in separate studies and only a few papers have tried to develop general frameworks able to capture at least some of the interactions between demographic changes, migration and healthcare provision. More work is required to develop richer theoretical models to understand the interplay between these different forces, taking into account that these issues are intrinsically dynamic in nature.

On the measurement side, our analysis has identified several key critical areas where more research is needed. First, our current understanding of migration and population dynamics is shaped by our limited ability to systematically track individuals over time in existing datasets, and in particular by the lack of information on an individual’s entire migration history. This important shortcoming in the data makes it difficult to provide fully satisfactory answers to some key policy questions, like the extent to which migration is permanent or temporary, the individual level characteristics that affect the decision to migrate multiple times, and the extent to which subsequent immigrant cohorts integrate and assimilate in the destination countries. Gaining a better grasp of the relevance of
temporary migration patterns is also crucial to our understanding of the interaction between foreign born individuals and the welfare state, both in the host and in the source country.

Our analysis has argued that immigration plays a key role in providing a flexible response to short term skill shortages in a variety of sectors of the economy, and in particular in the case of healthcare and long term care services. While progress has been made in understanding the impact of foreign care workers on the destination country’s labor force, the evidence is still rather sparse, and much more work is needed to assess the effective impact of health workers migration in European countries. This need is especially urgent when it comes to assessing the role of long term care workers, who are often employed in the informal sector and as a result are less likely to be captured in the official statistics.

Last but not least, population ageing in a common market where people are free to move is likely to lead to large flows of migrants looking for better amenities while retired. The phenomenon has been ongoing for several decades in the United States, and we have some basic understanding of the drivers and consequences of old age migration for the sun-belt states. Little is known instead in the European context, where the flow of elderly migrants to the Mediterranean is starting to become significant. Much more work is needed in this area, and data allowing to capture individual level migration histories would greatly facilitate the analysis.
10. References


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